Wildlife Biological Evaluation

Sheep Creek Vegetation Management Project

La Grande Ranger District, Wallowa-Whitman National Forest

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Authors:

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WILDLIFE BIOLOGICAL EVALUATION

Introduction

An endangered species is an animal or plant species listed under the Endangered Species Act that is in danger of extinction throughout all or a significant portion of its range. A threatened species is an animal or plant species listed under the Endangered Species Act that is likely to become endangered within the foreseeable future throughout all or a significant portion of its range. A sensitive species is an animal or plant species identified by the Forest Service Regional Forester for which species viability is a concern either a) because of significant current or predicted downward trend in population numbers or density, or b) because of significant current or predicted downward trends in habitat capability that would reduce a species' existing distribution. The R6 Sensitive Species list pertinent to this project is dated August, 2015. Threatened, endangered, and sensitive species effects are summarized in this report by TES status and species.

As part of the National Environmental Policy Act (NEPA) decision-making process, biological evaluations (BE) are required to determine how proposed FS management activities may affect Proposed, Endangered, Threatened, or Sensitive (PETS) species or their habitats (U.S. Forest Service Manual [FSM] 2670). This evaluation presents existing information on PETS species and their habitat in the project area, and describes the anticipated direct, indirect, and cumulative effects resulting from the proposed project. The review is conducted to ensure that FS actions do not contribute to the loss of species viability or cause a species to move toward federal listing (43 U.S.C. 1707 et seq). Threatened and Endangered species are managed under authority of the Federal Endangered Species Act (ESA) (36 U.S.C. 1531-1544) and the National Forest Management Act (NFMA) (16 U.S.C. 1600-1614). The ESA requires Federal agencies make certain all actions they authorize, fund, or carry out will not likely jeopardize the continued existence of any threatened or endangered species. Sensitive species are those recognized by the Region 6 Regional Forester as needing special management to meet NFMA obligations. FS policy requires a BE to determine possible effects to sensitive species from proposed management activities.

PRE FIELD REVIEW

The following proposed, endangered, threatened, or sensitive species (PETS) of wildlife are listed on the Regional Forester's Sensitive Species List (January 2015; Table 1). Only those PETS, or their habitats, known or suspected to occur in or immediately adjacent to the analysis area are addressed in this BE.

Table 1. PETS Species Review, WWNF and Sheep Creek Project Area

Common Name	Scientific Name	USFWS Status	USFS Status	WWNF Occurrence/ Sheep Creek Occurrence	Addressed Further in this BE
Amphibians					
ROCKY MOUNTAIN TAILED FROG	*Ascaphus montanus*		SEN	D/N	
Tailed frogs are strongly adapted to cold water conditions. They occur in very cold, fast-flowing streams that contain large cobble or boulder substrates, little silt, often darkly shaded, and less than 20ºC (Bull and Carter 1996). Tailed frogs have never been documented within the Upper Grande Ronde watershed.					
COLUMBIA SPOTTED FROG	*Rana leutriventris*		SEN	D/K	X
This species is found at aquatic sites in a variety of vegetation types, from grasslands to forests (Csuti et al. 1997). Spotted frogs are well documented within Sheep Creek and habitat exists within					
Birds					
UPLAND SANDPIPER	*Bartramia longicauda*		SEN	D/N	
Suitable habitats in Oregon consist of large montane meadows ranging from 1,000 to 30,000 acres, generally surrounded by lodgepole pine (Marshall et al. 2003). The project area lacks suitable habitat, and no known sightings are reported for the area.					
AMERICAN PEREGRINE FALCON	*Falco Peregrinus Anatum*		SEN	D/N	
GREATER SAGE-GROUSE	*Centrocercus urophasianus*		SEN	S/N	
Suitable habitats are associated with sagebrush. The project area lacks suitable habitat and known sightings for sage grouse.					
BUFFLEHEAD	*Bucephala albeola*		SEN	S/N	
Known breeding range in Oregon is restricted to the Cascades. Breeding habitat consists of high-elevation lake or pond habitat surrounded by forest (ODFW 2006). The project area lacks suitable habitat, and no known sightings are reported for the area.					
BALD EAGLE	*Haliaeetus Leucocephalus*	DELISTED	SEN	D/H	X
Nesting habitat consists of large conifers within 1 km of water containing adequate supply of medium to large fish (Johnsgard 1990). No known nest sites exist within the project area. The project area does contain potential foraging habitat and the potential for species occurrence.					
LEWIS' WOODPECKER	*Melanerpes Lewis*		SEN	D/H	X
Primary breeding habitats include open ponderosa pine, riparian cottonwood, and logged or burned pine (Tobalske 1997). No sightings are reported for the project area but potential habitat is present.					
WHITE-HEADED WOODPECKER	*Picoides Albolarvatus*		SEN	D/H	X
Nesting habitat consists of open-canopy stands with mature and overmature ponderosa pine (Buchanon et al. 2003). A habitat suitability index identifies some potential habitat within the project area but survey transects did not detect any individuals.					
COLUMBIAN SHARP-TAILED GROUSE	*Tympanuchus Phasianellus Columbianus*		SEN	D/N	

Potential habitats consist of bunchgrass prairies interspersed with stam bottoms containing deciduous shrubs and trees. The species was extirpated from Oregon, but has been reintroduced into northern Wallowa County (ODFW 2010). No sightings or potential suitable habitat occur within or adjacent to the project area. Occurrence within the project area is unlikely.					
MAMMALS					
CANADA LYNX	*Lynx Canadensis*	THREATENED		D/N	X
The species is classified as "not present" on the WWNF					
GRAY WOLF	*Canis Lupus*	DELISTED	SEN	D/H	X
Gray wolves are habitat generalists inhabiting a variety of plant communities, typically containing a mix of forested and open areas with a variety of topographic features. Potential habitat exists, but no known packs are currently utilizing the area for breeding.					
FISHER	*Martes Pennanti*		SEN	S/N	
Preferred habitat consists of late-successional conifer forests. No sightings have been reported for northeastern Oregon since 1976, leaving no evidence for an extant population in the Wallowa Mountains (Aubrey and Lewis 2003).					
CALIFORNIA WOLVERINE	*Gulo Gulo Luteus*	CANDIDATE	SEN	D/N	X
Preferred habitat consists of alpine and subalpine areas with little or no human presence. Project area does not contain suitable habitat.					
TOWNSENDS BIG-EARED BAT	Corynorhinus townsendii		SEN	S/N	
This bat roosts in buildings, caves, mines, and bridges and the presence of suitable roost sites is more important than the vegetation type in determining the distribution of this bat. There are no known roost sites for Townsends within the Sheep Creel project area.					
SPOTTED BAT	Euderma maculatum		SEN	S/N	
Spotted bats primarily rely on crevices and caves in tall cliffs for roosting which likely determine their distribution. The Sheep Creek project area lacks tall cliffs, making occupancy unlikey.					
FRINGED MYOTIS	Myotis thysanodes		SEN	D/H	x
This bat is found throughout much of western North America and has been documented on the Wallowa-Whitman. Roosting in decadent trees and snags is common throughout it's range. The presence of large trees within the project area makes occurrence likely.					
MOLLUSKS					
POPLAR OREGONIAN	*Cryptomastix populi*		SEN	S/N	
Land snail found in rather open and dry large-scale basalt taluses, generally at lower elevations. Most colonies occur at slope bases along the major river corridors, not in major tributaries. Associated vegetation includes *Celtus, Artemisia, Prunus, Balsamorrhiza,* and *Seligeria*. Surrounding vegetation is generally sage scrub. Generally in steep north or east-facing taluses, often only at the base. Occasionally found in meta sedimantary taluses as well (Frest and Johannes 1995). Lack of large scale basalt talus makes the occurrence of this species unlikely.					
UMATILLA MEGOMPHIX	*Megomphix lutarius*		SEN	D/N	
Land snail found within talus, closely associated with intact conifer forests, riparian areas or both. Thought to potentially be extinct due to lack of relocations, surveys conducted on the Umatilla in 2012 and within the La Grande district on the Wallowa-Whitman in 2016 found this species in 3 separate sites. Lack of talus within the project area makes it unlikely for this species to be present.					
BLUE MOUNTAINSNAIL	*Oreohelix strigosa delicata*		SEN	S/N	
Oreohelix strigosa is a snail of riparian habitat and open forest, typically found in rock talus, shrubby areas, or under forest litter (Burke 2013) fairly open ponderosa pine and Douglas-fir forest with some deciduous understory and common grasses. Refugia sites for aestivation are assumed to be located under more stable rock schist and woody debris. Surveys conducted on the Wallowa-Whitman did not locate this species, though another thought to be undescribed species of Oreohelix was found on the La Grande district within a talus slope above a riparian area. It is unlikely this species occurs within the project area, due to its rarity and lack of talus within the project area					

FIR PINWHEEL	*Radiodiscus Albietum*		SEN	D/H	X
Most often found in moist and rocky Douglas-fir forest at mid-elevations in valleys and ravines (Frest and Johannes 1995). Recent surveys performed in the La Grande district have found the speices to exist on the Wallowa-Whitman forest. The presence of moist Douglas-Fir forests in the project area indicates habitat it available.					
COLUMBIA GORGE OREGONIAN	*Cryptomastix hendersoni*		SEN	S/N	
Land snail found in rather open and dry large-scale basalt taluses, generally at lower elevations. Most colonies occur at slope bases along the major river corridors, not in major tributaries. Associated vegetation includes *Celtus, Artemisia, Prunus, Balsamorrhiza,* and *Seligeria*. Surrounding vegetation is generally sage scrub. Generally in steep north or east-facing taluses, often only at the base. Occasionally found in meta sedimantary taluses as well (Frest and Johannes 1995). Lack of basalt talus makes the occurrence of this species unlikely.					
SHINY TIGHTCOIL	Pristiloma wascoense		SEN	S/H	X
Most sites for this species are in ponderosa pine and douglas fir forests at moderate to high elevations. Quaking aspen also provides habitat. Other Pristiloma species in the ecoregion are known to prefer moist microsites such as basalt talus accumulations, usually with riparian influence. Recent surveys have documented this species on the Wallowa-Whitman and potential habitat is present.					
INSECTS					
MEADOW FRITILLARY	*Boloria Bellona*		SEN	S/N	
The only known site in Oregon is located in Umatilla County (Fleckenstein 2006). The project area is located outside the known distribution of this species.					
SILVER-BORDERED FRITILLARY	*Boloria Selene*		SEN	S/N	
Suitable habitat consists of bog and marshes, often willowy sites, sometimes tall wet grass (Pyle 2002) with larvae dependent on violet species. Only three sites are reported for Oregon, one of which is located north of the town of Halfway on private land. The Halfway site is located about 5 air miles east of the project area. No larval host species are reported for the project area, and suitable habitat for this species is unlikely.					
INTERMOUNTAIN SULPHUR	*Colias occidentalis pseudochristina*		SEN	D/N	
Suitable habitat consists of sagebrush with scattered Ponderosa Pine. No sightings have been documented and suitable habitat is not available in the project area.					
YUMA SKIPPER	*Ochlodes yuma*		SEN	D/N	
This species has been documented along the Imnaha River in Wallow Co. It is closely associated with its host plant Phragmites australis. Lack of the presence of the host species within the project area makes occurrence highly unlikely.					
SUCKLEY CUCKOO BUMBLEBEE	*Bombus suckleyi*		SEN	D/H	x
This species of cuckoo bumblebee is a known parasite of colonies of *Bombus occidentalis* and as such is expected to inhabitat much of the same range as the western bumblebee. Surveys conducted on the Wallowa-Whitman from 2014-2018 only detected this species in two sites. The presence of floral montane resources in the project area indicate habitat is present.					
MORRISONI BUMBLEBEE	*Bombus morrisoni*		SEN	D/N	
This species is known throughout the US Mountain West from CA east of the Sierra-Cascade Ranges to southern BC, in the Desert West and east to NM, TX and north to western SD (Williams et al. 2014). Surveys across the Wallowa-Whitman from 2014-2018 have not detected this species. The lack of open, dry scrub in the project area makes this species unlikely to occur.					
WESTERN BUMBLEBEE	*Bombus occidentalis*		SEN	D/H	X
The western bumblebee is a habitat generalist and inhabits a wide variety of habitat types, associated with flowering plants. Recent surveys across the Wallowa-Whitman has found them to be distributed across multiple elevations and habitat types. No sightings have been documented within the project area but habitat and distribution indicates occurrence is likely.					

SEN = Sensitive.
[1]D = Documented occurrence, S = Suspected occurrence (USDA Forest Service 2009).
[2] K = Known to occur, S = Suspected to occur, H = Not known to occur, but habitat present, N = No habitat present and/or not present.

Methodology

In general, the analysis area is the same as the project area unless stated below for each species. For cumulative effects, past activities within the project area have been incorporated into the existing condition descriptions below. Present and reasonably foreseeable future actions are described in Appendix D of the EA. Those actions which overlap in time and space with the Sheep Creek project which would have a measurable cumulative effect on each of these species are described in the cumulative effects discussions below.

COLUMBIA SPOTTED FROG (*Rana luteiventris)*

Background Information

This species is found at aquatic sites in a variety of vegetation types, from grasslands to forests (Csuti et al. 2001). It is highly aquatic and is usually near cool, permanent, quiet water. It is found in marshes, wet meadows, permanent ponds, lake edges, and slow streams with non-woody wetland vegetation, but may move considerable distances after breeding. Breeding occurs in shallow water at pond edges, stream margins, and in inundated floodplains. Egg masses are free floating and tadpoles live in the warmest parts of the water. Springs maybe used as over-wintering sites for local populations of spotted frogs.
Threats include pond bank destabilization by ungulates, activities that impact the hydrologic function of the floodplain and conifer encroachment in meadows around breeding ponds.

Existing conditions

A study conducted from 1997-2004 in northeastern Oregon found that the frog is widely distributed throughout northeastern Oregon where permanent ponds and rivers or creeks occur, and that although populations are generally not large, numerous small ones occur, particularly when connected by flowing water (Bull 2005). Egg mass surveys are conducted annually along the Upper Grande Ronde and its tributaries, including Sheep Creek. Sheep Creek contains a number of historical breeding ponds and pit tag surveys along a section of Sheep Creek were conducted in 2018, to provide baseline surveys for a stream restoration project. Populations appear to be steady within the Upper Grande Ronde.

EFFECTS ANALYSIS

Alternative 1- Under this alternative, the risk of uncharacteristic wildfire or disease/insect outbreaks would continue to increase naturally over time because there would be no changes to stand stocking levels (currently overstocked) or fuel loads from active management. Assuming no uncharacteristic wildfire or disease/insect outbreaks conifer encroachment on meadows and over streams could lower water temperature on breeding ponds, reducing habitat for spotted frogs. Uncharacteristic wildfires could affect spotted frogs and their habitat by burning through riparian areas and removing existing trees, aspen, and other riparian vegetation that is currently shading streams, preventing erosion and sedimentation, and keeping banks stable.

Alternative 2 and 3 (Discussion of these alternative is combined because the effects would be similar) – There would be no direct effects to spotted frogs from treatment activities because no treatments would take place within the stream or breeding pond sites. Alternatives 2 and 3 propose 36 acres of meadow restoration treatments intended to remove encroaching small diameter conifers from a meadow system. This will

maintain the meadow as stream restoration projects works to restore the hydrologic function on the floodplain. Commercial and fuels treatments in the uplands would create forest conditions more resilient to future disturbances and allow for fire to return to the system and maintain healthy systems, with Alternative 2 proposing to treat more acres than Alternative 3.

Determination- Proposed project activities under Alternative 2 are expected to have a **Beneficial Impact (BI)** due to the meadow restoration treatment**.**

BALD EAGLE

Background Information

The bald eagle ranges throughout much of North America, nesting on both coasts and north into Alaska, and wintering as far south as Baja California. The largest breeding populations in the contiguous United States occur in the Pacific Northwest states, the Great Lakes states, Chesapeake Bay, and Florida. In Oregon, species numbers vary by season and include breeding, migration and wintering populations. The breeding season begins in late February or March, with juveniles fledging between mid-July and early September.

Nesting territories are normally associated with lakes, reservoirs, rivers, or large streams. In the Pacific Northwest recovery area the preferred nesting habitat for bald eagles is predominately uneven-aged, mature coniferous (ponderosa pine, Douglas-fir) stands or large black cottonwood trees along a riparian corridor. Eagles usually nest in mature conifers with gnarled limbs that provide ideal platforms for nests.

Existing Conditions

Bald Eagles are known to occupy Vey Meadows (a large privately owned ranch that occurs within the northern part of the project area) during winter and spring. The project area contains several streams, Sheep and Chicken creek which could be utilized by bald eagles for occasional foraging.

Direct and Indirect Effects

Alternative 1 **-** There will be no direct adverse effects to bald eagles from the No Action Alternative because no timber harvest, fuel treatments, or transportation activities will occur.

Alternatives 2 and 3 **–** Discussion of these alternatives is combined because effects would be similar. Potential impacts to bald eagles are similar under all action alternatives because no timber harvest or active lighting of prescribed fire will occur within 300 feet of perennial fish bearing streams under any alternative and log hauling and smoke from fuels treatments will occur under all action alternatives. Potential foraging in the project area could occur at Sheep Creek, although the likelihood of occurrence is low based on the lack of reported sightings. Intermediate treatments within one mile of Sheep Creek may benefit future bald eagle nesting habitat by accelerating tree growth and reducing risk of stand disturbance due to insect-outbreak and wildfire. Smoke generated by fuels treatments may be of sufficient density to temporarily displace foraging eagles, but the impact would be of short duration. Increased human activity along portions of Sheep Creek due to log hauling and transportation-related activities may displace foraging eagles if present in close proximity to activities. However, the impact would be localized and temporary. In addition, risk of disturbance to foraging bald eagles is low for all activities due to a lack of past occurrence in the project area. If bald eagle use of the project area changes, this new information would be assessed and mitigations developed to protect newly discovered nests or roost sites.

Cumulative Effects

All alternatives - The area considered for cumulative effects is the project area, as well as the area within one mile of the project area boundary. One mile is the distance described as a threshold for disturbance of nesting bald eagles (USDA Forest Service 2009) and would encompass shorter disturbance distance for foraging eagles. All of the activities in Appendix D of the EA have been considered for their cumulative effects on bald eagles and their habitat. Ongoing and foreseeable activities considered in this cumulative effects analysis include firewood cutting, travel of open roads, summer and winter recreation, livestock grazing, and prescribed fire activities outside the project area. No measurable cumulative impacts to bald eagles are expected due to lack of negative impacts to available perching habitat.

Determination

All action alternatives would have no effect on bald eagle nesting or winter foraging/roosting. Due to the low level of eagle foraging activity along Sheep Creek, increased smoke levels due to fuels treatments and increased human presence associated with project activities **may temporarily displace individuals, but will not likely contribute to a trend towards Federal listing or cause a loss of viability to the population or species (MIIH).**

LEWIS WOODPECKER (*Melanerpes lewis*)

Background information

This woodpecker is associated with open woodland habitat, often at lower elevations, near water (Marshall et al. 2003). In Oregon, it breeds primarily in white oak, ponderosa pine, and riparian cottonwood communities of the river valleys of eastern Oregon, and winters in oak savannah (Csuti et al. 2001, Marshall et al. 2003). Important components of breeding habitat include an open woodland canopy and large diameter dead or dying trees. Large, stand replacement fires in ponderosa pine along streams and rivers provide important nesting habitat for this species. Nest sites are usually near streams, wet meadows or dense shrub cover where insects are abundant. It winters in oak savannah. Unlike most woodpeckers, the Lewis' does not peck at wood for food but catches insects by flycatching and gleaning during spring and summer. It feeds on ripe fruits and acorns during fall and winter.

Existing conditions

No surveys have been specifically conducted for the Lewis woodpecker, however incidental sightings have been reported along the Grande Ronde River. No sightings have been recorded within the project area boundary. While its presence in the project area is unknown, the presence of ponderosa pine forest indicate potential habitat may exist. It may occur in the ponderosa pine and riparian habitat along Sheep and Chicken creek. The project area is almost completely lacking in Old Forest Single Story (OFSS) which is characteristic of old ponderosa pine forests. Large ponderosa pine, western larch and Douglas-fir snags are uncommon in the project area because of past timber management, road building and firewood cutting. A snag anlaysis show Snags >21" dbh are deficient in most abundance classes across most of the project area (See Wildife Specialist Report). There are remnant cottonwood within riparian habitat, though many are currently being suppressed by lodegepole pine and grand fir.

EFFECTS ANALYSIS

Alternative 1- Under this alternative, the risk of uncharacteristic wildfire or disease/insect outbreaks would continue to increase naturally over time because there would be no changes to stand stocking levels or fuel loads from active management. Conversely, wildfire would likely also produce snags, but newly created snags are usually hard and not easily excavated. Sound live trees that are killed by fire do not contain the rot and defects that exists in snags and logs that die more slowly from other causes. The impact to habitat would depend on the size and severity of the disturbance. Riparian habitat would continue to be deficient in hardwoods.

Action Alternatives (Discussion is combined because effects would be similar) – Alternative 2 and 3 propose commercial and non-commercial treatment within existing OFMS structure stages to move those stands to a single story structure stage, and treatments within the understory reinitiation structure to encourage large tree growth within an open canopy setting. Alternative 2 would directly treat more acres than Alternative 3. No trees over 21 dbh would be removed in these treatments. In the short term, disturbance from treatment activities might cause individual birds to shift spatially, but these alternatives would increase the potential of the project area to provide habitat. The proposed treatments (removing small trees, retaining big trees, underburning) for these alternatives would help in dry forest restoration and over the long term would move the project area toward open stands of single-story, mature ponderosa pine and douglas fir. Additionally, Alternative 2 proposes treatment within specific riparian habitat, removing competition around existing hardwoods to promote growth and reducing the density to promote larger tree growth. Alternative 3 does not propose any of these treatments.
Long-term reductions in potentially available burned habitat are expected, but would be offset by a relatively steady availability of suitable green stands. In the long-term, maintenance burning would reduce shrub availability temporarily, but shrub growth and development that support insect prey populations is expected to occur between burning treatments. Alternative 3 does not propose any of these treatments.

Table 2. Treatment with Dry PVG stands and Riparian habitat

Treatment Type by Alternative, Acres, Sheep Creek Project Area				
	Alternative 2		**Alternative 3**	
	Comm.	**Rx Fuel Only**	**Comm.**	**Rx Fuel**
OFMS to OFSS	68 acres	160 acres	0 acres	142 acres
UR to OFSS	606 acres	532 acres	371 acres	462 acres
RHCA	13 acres	248 acres	0 acres	0 acres

Meadow	0 acres	36 acres	0 acres	0 acres

Cumulative effects

Past activities that have affected Lewis woodpecker habitat include grazing, fire suppression, prescribed fire, logging and woodcutting and have been incorporated into the existing conditions Lewis' woodpeckers have relatively small home ranges (15 acres, Thomas 1979) and the cumulative effects are analyzed at the project level. Ongoing and future activites that may impact Lewis' woodpecker habitat is grazing. Grazing has the potential to reduce shrub presence in suitable stands, but the predicted degree of impact is unknown. This effect is not expected to be significant. The Sheep Creek project is not expected to contribute to cumulative effects for the Lewis Woodpecker.

Determination – Effects from Alternative 2 and 3 are expected to have a **Beneficial Impact (BI)** on the species through habitat creation, with Alternative 2 having a greater impact than Alternative 3.

WHITE-HEADED WOODPECKER (*Picoides albolarvatus*)

Background Information

This woodpecker is closely associated with open ponderosa pine or mixed conifer dominated by ponderosa pine (Csuti et al. 2001). Although most abundant in uncut old-growth forest stands, white headed woodpeckers will use areas where silviculture treatments provide sufficient densities of large-diameter ponderosa pines. It requires large trees for foraging and snags for nesting (Csuti et al. 2001). An Oregon study found that they spent most of their time foraging in trees greater than 20 inches in diameter and nest trees averaged 18 inches in diameter. Nest sites are usually excavated in snags but can also occur in stumps, leaning logs, and dead tops of live trees. It is the only woodpecker that relies heavily on ponderosa pine seeds for food. It forages on the trunks, branches, and foliage of large-diameter ponderosa pine for pine seeds and insects. It rarely drums or taps and feeds by scaling back off trees to reach insects underneath.

Existing conditions

The white-headed woodpecker is an uncommon permanent resident in forests of the Ochoco, Blue, and Wallowa Mtns. Past, present, and ongoing habitat loss pose a threat to the continued existence of the species throughout its range (Wisdom et al. 2000). The amount of old-growth ponderosa pine left in Oregon is unknown, but it is probably less than 10% of what occurred in pre-European settlement (Marshall 1997). Among the most significant and greatest declining wildlife habitat in the Interior Columbia Basin is late and old-growth forest structure. Wisdom et al (2000) concludes that source habitat for most species declined strongly from historical to current periods across large geographic areas, that the steepest declines were for species dependent on low elevation, old forest habitats, and that the white-headed woodpecker has experienced the sharpest reduction of any species associated with late and old forest habitat. Much of the remaining late and old forest structure exists in isolated remnant stands. The loss has occurred mainly through a combination of timber harvest, road building, and wildlife. Motorized access into these areas increases the potential for disturbance and habitat fragmentation, and reduces habitat quality through the removal of snags and logs by firewood cutters (Wisdom et al 2000).
A Region 6 developed Habitat Suitability Index model (Latif et al. 2017) helps identify potential existing habitat within the forest. White-headed woodpecker surveys were conducted using this HIS to identify suitable habitat along the north and north-east portion of the project boundary where treatment is expected,

paired with a control transect outside the project boundary. Hairy woodpeckers and pileated woodpeckers were located but no white-headed woodpeckers were encountered. Baseline surveys allows for additional surveys after treatment to better understand the impacts of our treatments.

EFFECTS ANALYSIS

Alternative 1- Under this alternative, the risk of uncharacteristic wildfire or disease/insect outbreaks would continue to increase naturally over time because there would be no changes to stand stocking levels or fuel loads from active management. Conversely, wildfire would likely also produce snags, but newly created snags are usually hard and not easily excavated. Sound live trees that are killed by fire do not contain the rot and defects that exists in snags and logs that die more slowly from other causes. The impact to habitat would depend on the size and severity of the disturbance.

Action Alternatives (Discussion is combined because effects would be similar) – Alternative 2 and 3 propose commercial and non-commercial treatment within existing OFMS structure stages to move those stands to a single story structure stage, and treatments within the understory reinitiation structure to encourage large tree growth within an open canopy setting. Alternative 2 would directly treat more acres than Alternative 3. No trees over 21 dbh would be removed in these treatments. In the short term, disturbance from treatment activities might cause individual birds to shift spatially, but these alternatives would increase the potential of the project area to provide habitat. The proposed treatments (removing small trees, retaining big trees, underburning) for these alternatives would help in dry forest restoration and over the long term would move the project area toward open stands of single-story, mature ponderosa pine and douglas fir. Treatments in potential white-headed woodepcker habitat would begin to restore dry OFSS by removing smaller trees to promote the desired development of large ones. Activities would reduce tree densities but increase the rate of development of the large trees needed by white-headed woodpeckers. Long-term reductions in potentially available burned habitat are expected, but would be offset by a relatively steady availability of suitable green stands. In the long-term, maintenance burning would reduce shrub availability temporarily, but shrub growth and development that support insect prey populations is expected to occur between burning treatments.

Table 3. Proposed Treatment in Dry PVG, OFMS and UR structure stages

Treatment Type by Alternative, Acres, Sheep Creek Project Area				
	Alternative 2		**Alternative 3**	
	Comm.	**Rx Fuel Only**	**Comm.**	**Rx Fuel**
OFMS to OFSS	68 acres	160 acres	0 acres	142 acres
UR to OFSS	606 acres	532 acres	371 acres	462 acres

Cumulative effects

Past activities that have affected white-headed woodpecker habitat include grazing, fire suppression, prescribed fire, logging and woodcutting and have been incorporated into the existing conditions White-headed woodpecker home ranges are moderate in size, averaging about 257-524 acres in old-growth habitat (Dixon 1995) and the cumulative analysis was analyzed at the project scale. Ongoing and future activities that may affect white-headed wodpeckers is grazing. Livestock grazing has the potential to limit shrub densities which may reduce risk due to nest predation, but the degree of benefit is unknown. None of these effects are expected to be significant because they are not likely to impact habitat availability at this scale. The Sheep Creek project is not expected to contribute to cumulative effects to white-headed woodpeckers.

Determination – *Common to all alternatives*- Effects from Alternative 2 and 3 are expected to have a **Beneficial Impact (BI)** on the species through habitat creation, with Alternative 2 having a greater impact than Alternative 3.

CANADA LYNX

Background Information

Lynx occur in mesic coniferous forests that have cold, snowy winters and provide a prey base of snowshoe hare, their primary prey (Ruediger et al. 2000). The primary vegetation that contributes to lynx habitat is subalpine fir where lodgepole pine is a major seral species, generally between 4,000-6,500 feet elevation. Cool, moist Douglas-fir, grand fir, western larch, and aspen forests may also contribute to lynx habitat when interspersed with subalpine forests. Dry forest types (e.g., ponderosa pine, climax lodgepole pine) are not considered habitat.

Lynx select dense patches of downed trees for denning (Johnson and O'Neil 2001). Large, course woody debris is a common element of natal den sites. Hollow logs and root wads provide protection and thermal cover for kittens. Denning habitat must be in or adjacent to foraging habitat to be functional (Ruediger et al. 2000). Jack-strawed piles of logs form a habitat matrix offering thermal cover, hiding cover, and hunting areas (Johnson and O'Neil 2001).

Existing Conditions

The Blue Mountains represent the southern extent of lynx distribution, which would explain the rarity of this species on the periphery of its range both historically and presently. The presence of lynx in Oregon in the late 1800s and early 1900s is documented by 9 museum specimens collected from 1897 to 1927 (McKelvey et al. 2000). Records after that are rare. Only 4 recent specimens are known, one from Wallowa County in 1964, one from Benton County in 1974, and one from Harney County in 1993 (McKelvey et al. 2000). Based on limited verified records, lack of evidence of reproduction, and occurrences in atypical habitat that correspond with cyclic highs, lynx are thought to occur in Oregon as dispersers that have never maintained resident populations. They are considered an infrequent and casual visitor by the state of Oregon (Ruediger et al. 2000).

Lynx habitat in northeastern Oregon is categorized as a "peripheral area", meaning there is no evidence of long-term presence or reproduction that might indicate colonization or sustained use by lynx, but that it may enable the successful dispersal of lynx between populations or subpopulations. The Forest is considered "unoccupied" habitat because there has not been a verified lynx observation since 1999. "Occupied" habitat is defined as requiring at least 2 verified observations or records since 1999 on the Forest or evidence of lynx reproduction on the Forest.

Direct, Indirect, and Cumulative Effects

Alternative 1 - The No Action alternative would have no direct, indirect, or cumulative effects on lynx or lynx habitat since no management activities are proposed.

Determination

There would be **No Effect (NE)** to the Canada lynx from any of the alternatives for this proposed project because this species is not considered present on the Forest (Wallowa-Whitman National Forest Lynx Strategy Letter April 19, 2007).

GRAY WOLF

Background Information

Gray wolves are habitat generalists inhabiting a variety of plant communities, typically containing a mix of forested and open areas with a variety of topographic features. Historically, they occupied a broad spectrum of habitats including grasslands, sagebrush steppe, and coniferous, mixed, and alpine forests. They have extensive home ranges and prefer areas with few roads, generally avoiding areas with an open road density >1.0 mi/mi^2 (Witmer et al. 1998). Dens are usually located on moderately steep slopes with southerly aspects within close proximity to surface water. Rendezvous sites, used for resting and gathering, are complexes of meadows adjacent to timber and near water (Kaminski and Hansen 1984). Both dens and rendezvous sites are often characterized by having nearby forested cover remote from human disturbance. Wolves are strongly territorial, defending an area of 75-150 mi^2, and home range size and location is determined primarily by abundance of prey. Wolves feed largely on ungulates and beavers, but will consume small mammals and fish to a lesser extent (Verts and Carraway 1998). Wolves are generally limited by prey availability and threatened by human disturbance. Generally, land management activities are compatible with wolf protection and recovery, especially actions that manage for viable ungulate populations.

Existing Conditions

The WWNF occurs within the historic range of the gray wolf, but no breeding packs have been identified as using the project area (ODFW personal communication). Potential habitat and adequate prey occurs throughout the project area, and movement through the project area is likely.

Direct and Indirect Effects

Alternative 1 **-** There would be no direct, indirect, or cumulative impacts to wolves under the no-action alternative because no project activities would occur.

Alternatives 2 and 3 **-** Discussion of these alternatives is combined because the effects would be similar**.** The primary threats to wolves are human disturbance, mortality from shooting and vehicle collisions (Wisdom et al. 2000). Primary concerns for the Forest Service are 1) disturbance to denning or rendezvous sites, and 2) providing adequate habitat for populations of prey species such as elk (USDA Forest Service 2009).

None of the action alternatives would affect wolves or their habitat because there is an abundance of prey and prey is not a limiting factor, and most FS management activities are compatible with breeding wolf populations with relatively minor considerations for disturbance at dens and rendezvous sites. No known den or rendezvous sites are located within the Sheep Creek project area. For all action alternatives, treatments are not expected to impact big game prey availability (see Rocky Mountain Elk discussion).

Cumulative Effects

All alternatives - Because the home range of a colonizing wolf population can average 301^2 miles (Bangs and Fritts 1993) with dispersal movements up to 522 miles (Boyd and Pletscher 1999), the Upper Grande Ronde watershed (756^2 miles) define the cumulative effects analysis area. The only activity with potential cumulative impacts to wolves would be the implementation of a new Forest Plan. Management of motor vehicle use within the analysis area could have a positive effect on the distribution of elk, a primary prey resource for wolves. The TMP could reduce the density of designated motorized routes in all three watersheds as well as manage cross-country motor vehicle travel. Reduced road densities distribute elk across seasonal ranges during the proper season and may reduce the likelihood of wolves coming into contact with livestock on private lands. Ongoing livestock grazing on WWNF lands in the watersheds presents the

potential for wolf-livestock interaction on these lands. However, potential wolf-livestock interaction is not cumulative to activities proposed under this project, because project activities are not expected to affect wolves.

Determination

Common to All Alternatives: There would be **No Impact (NI)** to the gray wolf from any of the alternatives from this project due to a lack of effects resulting from management activities.

CALIFORNIA WOLVERINE

Background Information

Wolverines in the southern portion of their range utilize high-elevation alpine portions of Washington, Idaho, Montana, Wyoming, and Colorado. They do not appear to need specific vegetation or geologic habitat features, but instead select for areas that are cold and receive enough winter precipitation to reliably maintain deep persistent snow into the warm season. Mean seasonal elevations used by wolverines in the Northern Rocky Mountains and North Cascades vary between around 4,600 and 8,500 ft. depending on location, but are always relatively high on mountain slopes. In the contiguous United States, valley bottom habitat appears to be used only for dispersal movements and not for foraging or reproduction (Federal Registrar 2013).

Wolverines are not thought to be dependent on vegetation or habitat features that may be manipulated by land management activities. They have been documented using both recently logged areas and burned areas. It is unlikely that wolverine avoid the type of low-use roads that generally occur in wolverine habitat (Federal Register 2013). Additionally, the scale at which most land management decisions (including Forest Service vegetative management activities) occur is relatively small compared to the average size of a wolverine home range and although impacts to individual animals may occur, they do not rise to the level to be a threat to the population (Federal Register 2014). While there are no definitive effects currently known at the population level, there are on-going scientific investigations to better understand potential recreational impacts to wolverine.

On February 4, 2013, the U.S. Fish and Wildlife Service proposed to list the distinct population segment of the North American wolverine occurring in the contiguous United States, as a threatened species under the Endangered Species Act. On August 13, 2014, the USFWS withdrew its proposal to list the wolverine under the Endangered Species Act. As a result of this action, the wolverine automatically returned to the R6 Sensitive Species list. On April 4th, 2016 the district court of Missoula, Montana overturned the USFWS decision to withdraw the proposal. The wolverine is now considered a candidate species again

Existing Conditions

Adjacent wilderness areas including the Eagle Cap and North Fork John Day Wilderness are the nearest potential natal denning sites. There are no known den sites on the Forest (USDA Forest Service 2009). The Forest conducted extensive winter track surveys for wolverine and lynx from 1991 to 1994, and no wolverine tracks were found on what was formally-called the Pine RD, presently part of the Whitman RD (Wolverine and Lynx Winter Snow Track Reports, 1991-92, 1992-93, 1993-94). Surveys conducted on the WWNF during the winter of 2010/2011 detected 3 different wolverines, one of which was located in the southern Wallowa Mountains, across the Grande Ronde valley from the Sheep Creek project area. Nearly all of the project area is well-roaded, facilitating human disturbance though access by motorized vehicles. Existing suitable habitat is located primarily in roadless and wilderness areas.

Direct and Indirect Effects

Alternative 1 - There will be no direct impacts to wolverine from the No Action Alternative because no timber harvest, fuels treatments, or transportation activities will occur.

Alternatives 2 and 3 - Discussion of these alternatives is combined because the effects would be similar. Due to higher temperatures and increased summer human traffic, it is unlikely that wolverines would occupy portions of the project area that lie at lower elevations, south of the northern boundary, but movement through the project area is possible. The lack of lingering snowpack within the project area also minimizes the potential for wolverine denning. Forays into the project area would be more likely during the winter when human presence decreases due to snow, and potential food sources such as large ungulates move to lower elevations. Timber harvest operations, if conducted during the winter, could impact local presence and pattern of wolverine via disturbance, but impacts would be temporary. .

Cumulative Effects

All alternatives - Wolverines have large home ranges, estimated from studies in central Idaho to range from 26,000 to 128,000 acres (Banci 1994); corresponding to a cumulative effects area encompassing the project area and lands within a distance of 4.5 miles. Present and reasonably foreseeable future actions were analyzed for cumulative impacts to the species. Review of the FACTS database for the WWNF indicate that activities that may impact wolverine habitat within the Upper Grande Ronde watershed and outside the project area within the past 10 years consist of underburning, pre-commercial thinning, and commercial harvest. Because wolverines are known to avoid roaded areas, these activities occur in areas unlikely to impact the species.
Of the activities listed in Appendix D ongoing access and human use within the project area, and on lands to the east and west, may continue to preclude at least seasonal use by this species.

Determination

Past road construction has provided human access to portions of the project area that may have been utilized by wolverine historically. Activities proposed by the action alternatives would be undertaken primarily during the snow-free months when human presence is high and wolverine use unlikely. Winter timber harvest operations may impact presence and pattern of individual wolverine via disturbance. Project activities would not impact core habitats located in wilderness or roadless areas. Therefore, all action alternatives may impact individuals or habitat, but will not likely contribute to a trend towards Federal listing or cause a loss of viability to the population or species (MIIH).

FRINGED MYOTIS (*Myotis thysanodes*)

Background Information

The fringed myotis ranges through much of western North America. It primarily occurs from sea-level to 9348 f, but is primarily found at middle elevations (3936-6888ft). Distribution is patchy. It appears to be most common in drier woodlands (oak, ponderosa pine) but is found in a wide variety of habitats including desert scrub, mesic coniferous forest, grassland, and sage-grass steppe (OOFarrel et al. 1980). They are known to roost in crevices in buildings, underground mines, rocks, cliff faces, and bridges but roosting in decadent trees and snags, particularly large ones, is common throughout its range. The fringed myotis has been documented in a large variety of tree species and it is likely that structural characteristics (e.g. height, decay stage) rather than tree species play a greater role in selection of a snag or tree as a roost (Weller and Zabel 2001). This myotis feeds on a variety of invertebrate taxa. The two most commonly reported orders in its diet are beetles and moths, however several potentially flightless taxa such as harvestmen, spiders, and crickets have been found in its diet. The presence of non-flying taxa in its diet indicates that they may glean prey from vegetation in addition to capturing prey on the wing. The potential to glean prey in concert with its

wing-loading, flight style, morphological adaptations of wing and tail membranes, and design of its echolocation call indicate that the fringed myotis is adapted for foraging within forest interiors and along forest edges. The main threats for long term persistence of the fringed myotis is the loss or modification of roosting habitat. Removal of large blocks of forest or woodland habitat may also threaten the species due to its apparent propensity for foraging in and around trees (Bradley and Ports 1998).

Existing conditions

There is no known records of fringed myotis in the project area. There are no known roost sites, or hibernacula or maternity colonies in the project area. While its occurrence in the project area is unknown, the presence of ponderosa pine forest and permanent water indicate potential habitat may exist.

EFFECTS ANALYSIS

Alternative 1- Under this alternative, the risk of uncharacteristic wildfire or disease/insect outbreaks would continue to increase naturally over time because there would be no changes to stand stocking levels or fuel loads from active management. Assuming no uncharacteristic wildfires or disease/insect outbreaks, this alternative would limit habitat by perpetuating overstocked stand conditions. If uncharacteristic wildfire or disease/insect outbreaks occurred, the impact to habitat would depend on the size and severity of disturbance.

Alternatives 2 and 3 - *Discussion of these alternatives is combined because the effects would be similar*. If fringed myotis occur in the project area, mechanical treatments and/or smoke from prescribed fire could result in the deaths of individual bats or cause them to shift spatially when foraging, but these treatments would also likely create habitat. Thinning stands typically benefits bats by increasing flight space in the stand and by promoting herbaceous growth for insect prey by increasing the amount of sunlight reaching the forest floor (Taylor 2006). Fire can also improve foraging space and travel corridors by decreasing tree density and increasing openings, and can increase insect prey diversity and abundance by increasing plant growth. Roosting habitat would not be significantly effected as no snags $\geq$ 9" dbh or trees > 21 dbh (these trees represent future large snags) would be cut unless identified as imminent danger trees.

Cumulative effects

Ongoing and reasonably foreseeable activities within or near the project area include firewood cutting, grazing, prescribed fire, noxious weed treatment, road maintenance, and recreation (snowmobile, OHV use, mountain biking, dispersed camping, hunting). Of these activities, the ones that have the potential to impact roost trees are firewood cutting and prescribed fire. Firewood cutting occurs primarily along roads and does not target snags or trees over 21 inches dbh so it should not have a measurable effect on roost site availability. Prescribed fire outside the project area could eliminate suitable roost sites in addition to the roost sites that would be eliminated from burning and harvest within the project area. However, prescribed fire is staggered across multiple years and the area will continue to provide a mosaic of burned and unburned habitat and thus provide an abundance of roost sites for this species.

Determination- ***Common to all alternatives***- The alternatives **May Impact Individuals or Habitat (MIIH)** but would not likely contribute to a trend towards Federal listing or cause a loss of viability to the population or species.

FIR PINWHEEL (*Radiodiscus abietum)* and SHINY TIGHTCOIL (*Pristiloma wascoense)*

Background information

Radiodiscus abietum is ranked as S1 (Critically Imperiled) in Oregon (ORBIC 2016). It is a terrestrial pulmonate snail originally collected from near the mouth of the East Fork Weiser River in Idaho (Baker 1930). Generally found in rather moist, rocky forested terrain, at medium-high elevations. Most often, the dominant vegetation is *Pseudotsuga menziesii* forest, with a rich understory including many forbs, deciduous shrubs and bryophytes. Commonly associated species include *Alogona ptychophora ptychophora, Cryptomastix mullani subspp*. and other *Cryptomastix* spp., *Microphysula ingersolli* and *Anguispira kochi*. Frest and Johannes (1995) describe it as a mesophile species, apparently feeding on partly decayed leaves and organic debris in soil. They also note that it is most commonly found in remnant moist forest patches at moderate elevations but is never abundant.

Pristiloma wascoense is ranked as S2 (Imperiled) in Oregon and (ORBIC 2016). It is a terrestrial pulmonate snail originally collected from Wasco County in Oregon (Hemphill 1911). The species has been reported from ponderosa pine and Douglas-fir forested habitat at high elevations, as well as from moist, shaded talus habitat with deciduous trees; moist microsites associated with talus or riparian habitat may be typical for members of the genus (Jordan 2010). Burke (2013) notes the species may often be found in the vicinity of deciduous trees such as aspen and cottonwood. Associated mollusks include Anguispira kochi, Cryptomastix mullani, Euconulus fulvus, Punctum randolphi, and Discus whitneyi (Frest and Johannes 1995, Jordan 2010).

Pristiloma idahoense is ranked as S1 (Critically Imperiled) in Oregon (ORBIC 2016). It is a terrestrial pulmonate snail. In Oregon, this species was detected from a nearly vertical lava exposure overgrown with dry moss, ferns and scattered bushes, below a north-facing slope with Douglas fir (*P. menziesii*) and only a few feet from a practically dry creek bed (Baker 1932). It has also been found in damp soil under a willow (*Salix*) thicket with adjacent shallow ponded water with little coniferous cover; other species present at the Wallowa-Whitman National Forest site include corn lily (*Veratrum californicum*), spruce (*Picea* spp.), and grand fir (*Abies grandis*) (Blevins *et al.* 2018).

Activities that compact soils or snow, disturb ground vegetation and/or litter, remove woody debris, alter temperature and/or humidity of the microsite, reduce canopy cover, or alter the water table could be deleterious to the habitat of *Pristiloma and radiodiscus* species (Gowan and Burke 1999). These activities include livestock grazing, timber activities, recreational activities, mining activities, heavy equipment operation, water diversions and improvements, and construction operations (Gowan and Burke 1999).

Existing conditions

Recent surveys on the Wallowa-Whitman National Forest (2016-2019, Blevins et al.) found all three of these species distributed in low numbers across the forest. A simple analysis of variation found no statistical difference in slope, aspect, elevation and canopy cover variables for these three species and they were often found together on the same survey site. As such, it seems reasonable to combine them for an effects analysis. These species were more often found on ash soil types, within multi story structure stages in the moist potential vegetation group, with canopy cover higher than >70% (Personal communication, L. Navarrete). Surveys were conducted within the Sheep Creek project area and none of these species were found, however detectability rates are low and the presence of moist douglas-fir, grand fir and riparian habitat makes potential habitat likely. Using the variables identified as correlating with species presence, potential habitat was mapped out within the project area.

Direct and Indirect Effect

Alternative 1 - There would be no direct impacts to this species under the no-action alternative due to a lack of proposed management activities. The risk of uncharacteristic wildfire or disease/insect outbreaks would continue to increase naturally over time because there would be no changes to stand stocking levels or fuel

loads from active management. If uncharacteristic wildfire or disease/insect outbreaks occurred, the impact to habitat would depend on the size and severity of disturbance

Alternatives 2 and 3 - Discussion of these alternatives is combined because the effects would be similar. Proposed treatments that reduce canopy cover can result in increases in microclimate extremes, changes in forest vegetation and litter, soil compaction and population fragmentation. In addition, fuel treatments often result in reduction of coarse woody debris (Kappes 2005). No treatments are proposed within the stands identified as potential habitat based on correlated variables, however there are treatments in some stands with high canopy cover No treatment in high canopy cover areas is expected to bring the stand level canopy cover below 40%, though some gap openings are proposed which would remove those acres from functioning as snail habitat. The majority of prescriptions will utilize variable retention thinning which has less of an impact on gastropod communities than complete removal of trees. Maintaining patches of trees provides microhabitats and lowers the harvest related loss of organisms (Jordan and Black, 2012). Alternative 3 would reduce less acres of high canopy cover than Alternative 2
Prescribed burning can have a negative effect on terrestrial mollusks depending on the severity and often it can take up to 25 years for re-colonization. Intense fire events can even require a century for post-fire recolonization. There is no difference in proposed prescribed fire between alternatives, but Alternative 2 is expected to reduce wildlife hazard in the project more due to a higher number of acres treated.

Table 4. Proposed Treatments in >70% Canopy Cover Moist PVG Habitats

Treatment Type by Alternative, Acres, Sheep Creek Project Area			
Alternative 2		**Alternative 3**	
Comm.	**Rx Fuel Only**	**Comm.**	**Rx Fuel**
201 acres	383 acres	74 acres	141 acres

Cumulative Effects

All alternatives - Frest and Johannes (1995) describe logging of high canopy cover moderate-elevation douglas fir forest, grazing and severe forest fires as the highest threats to the fir pinwheel (Frest and Johannes 1995). Grazing will continue within the project area in traditional areas, with no additional areas proposed under this project. Vegetation and fuel treatments are expected to reduce the risk of high severity fires in the future. Due to a lack of overlapping activites, no cumulative impacts are expected.

Determination

Given the habitat and distribution descriptions provided by Frest and Johannes, this species and its habitats potentially occur within the project are. Vegetation management treatments could affect habitats by reducing moisture retention in areas and directly causing mortality through prescribed fire. However, by utilizing variable tree thinning, retaining canopy cover in patches within each treatment area, and understanding that prescribed fire is extremely variable and will not affect all habitat in the area it is utilized it is expected that this project may impact individuals or habitat but will not likely cause a trend toward Federal listing or a loss of viability of the population or species for *radiodiscus abietum, pristiloma wascoense* and *pristiloma idahoense* **(MIIH)**.

WESTERN BUMBLEBEE (*Bombus occidentalis*), **SUCKLEY CUCKOO BUMBLEBEE** (*Bombus suckleyi*)

Background Information

Many North American bumblebee species have undergone severe declines in recent decades (Cameron et al. 2011; Hatfield et al. 2014). Range losses have been documented for several species, including the western bumble bee (*Bombus occidentalis*), the suckley cuckoo bumblebee (*Bombus suckleyi*) and 27% of bumble bee species in the US and Canada are listed in an extinction risk category by the International Union for Conservation of Nature (IUCN) (Hatfield et al. 2014).

Bumble bees inhabit a wide variety of natural, agricultural, urban, and rural habitats, although species richness tends to peak in flower-rich meadows of forests and subalpine zones. Relatively recent changes in land usage have compromised this habitat, putting pressure on bumblebee populations. In addition to habitat loss and fragmentation, overgrazing, climate change, pesticide use, competition with honey bees, and the introduction of nonnative pathogens are all thought to contribute to the population decline of all North American bumblebees.

There are a number of threats facing bumble bees which include; the spread of pests and diseases by the commercial bumble bee industry, other pests and diseases, habitat destruction or alteration (agriculture, urban development, grazing), pesticides and invasive species. Specific to managed Forest Service lands, the invasiveness and dominance of native grasslands by exotic plants may threaten bumble bees by directly competing with the native nectar and pollen plants that they rely on. In the absence of fire, native conifers encroach upon many meadows, which removes habitat available to bumblebees. Apiaries put on National Forest land may compete with native pollinator species, putting additional stress on individuals (Hatfield et al. 2018).

Existing Conditions

Historically *B. occidentalis* and *B. suckleyi* were found from the Pacific coast to the Colorado Rocky Mountains, but have seen severe population decline west of the Sierra-Cascade Crest. In Oregon, this species has been documented on Deschutes, Fremont-Winema, Malheur, Mt. Hood, Ochoco, Rogue River-Siskiyou, Siuslaw, Umatilla, Umpqua, Willamette, and Wallow-Whitman National Forests, and BLM land in the Burns, Lakeview and Medford Districts. Given the relatively recent range contraction for these species, it is unknown what the current "Documented" status is for many of these field units, as many of the documented sites are considered historic. Surveys conducted on the La Grande district 2014-2015 found *B. occidentalis* to be low in abundance, but present at about 50% of the surveyed sites. These same surveys only located *B. suckleyi* in two locations.

Surveys were conducted within the Sheep Creek project area. Neither species were encountered.

Direct and Indirect Effects

Alternative 1- Under this alternative, the risk of uncharacteristic wildfire or disease/insect outbreaks would continue to increase naturally over time because there would be no changes to stand stocking levels or fuel loads from active management. Large stand replacing fires do have the potential to reduce available habitat in the short term for this species, though fire has been shown to be beneficial for pollinators (Panzer 2002). The impact to habitat would depend on the size and severity of the disturbance. Without active management, conifer encroachment into meadows would reduce the amount of habitat for bumblebees.

Alternative 2 and 3- Discussion is combined because effects of alternatives would be similar. Thinning can increase gaps in the canopy which can facilitate positive understory plant diversity and cover, helping to increase food resources. Thinning over large areas should result in increased cover of understory plants

which provides larger food patches with increased connectivity. However, heavy machinery can disturb and compact the soil which can have a negative effect on ground nesting bumblebees. Fire is positively correlated with plant diversity and pollinator visitation, with significant differences found in floral visitation rates between burned and unburned areas (Nuland et al.) However, prescribed fire can negatively directly affect immature bumblebees that are confined to the nest through direct mortality. Fire can also indirectly affect bumblebees by burning litter and coarse woody debris that is used as nest sites. Proper timing of prescribed fire is important to maximize its benefits. Fall burning occurs during the mobile stage of the bumblebee life cycle and is likely to have the least negative impact (Nyoka 201). Fuels treatments would reduce the risk of stand replacing fire and encourage the return of low severity fire that can enhance meadow habitat and forb species.

Cumulative effects- Past events that affected potential bumblebee habitat include grazing and fire suppression and have been incorporated into the existing conditions. Present and proposed activities within the project area with a potential to affect bumblebees are a continuation of the current level of livestock grazing and prescribed burning. There could be cumulative effects from these alternatives they would be limited spatially and temporally.

Determination- ***Common to all alternatives-*** A benefit to the species is expected by reducing canopy cover, however due to the uncertainty over how mechanical treatments and prescribed fire might affect nesting and hibernation habitat the alternatives **May Impact Individuals or Habitat (MIIH)** but would not likely contribute to a trend towards Federal listing or cause a loss of viability to the population or species for Western bumblebee or Suckley cuckoo bumblebee.

REFERENCES

Banci, V. 1994. Wolverine. *In* Ruggiero, L.F., K.B. Aubry, S.W. Buskirk, L.J. Lyon, and W.J. Zielinksi. The scientific basis for conserving carnivores, American marten, fish, lynx, and wolverine in the western United States. USDA Forest Service, Rocky Mtn. Forest and Range Exp. Stn., Gen. Tech. Rep. RM-254, Fort Collins, CO. pp. 99-127.

Bangs, E. E., and S. H. Fritts. 1993. Reintroduction of gray wolves to Yellowstone National Park and central Idaho. Endangered Species Tech. Bull. 18(3):1, 18-20

Boyd, Diane K. and D. H. Pletscher. 1999. Characteristics of Dispersal in a Colonizing Wolf Population in the Central Rocky Mountains. J. Wildl. Manage. 63(4): 1094-1108.

Branson, B. A. 1977. Freshwater and Terrestrial Mollusca of the Olympic Peninsula, Washington. The Veliger 19: 310-330.

Branson, B. A. 1980. Collections of gastropods from the Cascade Mountains of Washington. The Veliger 23: 171-176..

Bull, E.L., Carter, B.E., 1996. Tailed frogs: distribution, ecology and association with timber harvest in northeastern Oregon. United States Forest Service, Pacific Northwest ResearchStation, Portland, Oregon, Research Paper 497, pp. 11.

Burke, Thomas. 2013. Land Snail and Slugs of the Pacific Northwest. Oregon State University Press. Corvalis, OR 335 p.

Chandler, S.K., J.D. Fraser, D.A. Buehler, and J.K.D. Seegar. 1995. Perch trees and shoreline development as predictors of bald eagle distribution on Chesapeake Bay. Journal of Wildlife Management 59(2): 325-332.

Corkran, C. C., and C. Thoms. 2006. Amphibians of Oregon, Washington, and British Columbia. Lone Pine Publishing, Auburn, WA.

Csuti, B., A. J. Kimerling, T. A. O'Neil, M. M. Shaughnessy, E. P. Gaines, and M. M. P. Huso. 2001. Atlas of Oregon wildlife: distribution, habitat, and natural history. Oregon State University Press, Corvallis, OR. 492p.

Frest, T.J. and E.J. Johannes. 1995. Interior Columbia Basin mollusk species of special concern. Interior Columbia Basin Management Project. 274p.

Garrett, M.G., J.W. Watson, and R.G. Anthony. 1993. Bald eagle home range and habitat use in the Columbia River estuary. Journal of Wildlife Management 57(1): 19-27.

Gowan, D. and T. E. Burke. 1999. Conservation Assessment for *Pristiloma arcticum crateris*, Crater Lake Tightcoil. Originally issued as management recommendations; reconfigured September 2004 by N. Duncan. USDA Forest Service Region 6 and USDI Bureau of Land Management, Oregon and Washington. Available online at http://webcache.googleusercontent.com/search?q=cache:RL5zD-oJXFwJ:www.fs.fed.us/r6/sfpnw/issssp/documents/planning-docs/20050713-moll-crater-lake-tightcoil.doc+pristiloma+idahoense&cd=2&hl=en&ct=clnk&gl=us (Last accessed 29 June 2010).

Hawksworth, F.G. and D. Wiens. 1996. Dwarf Mistletoes: Biology, Pathology, and Systematics. Agriculture Handbook 709. USDA Forest Service, Washington, DC. 410p.

Hessburg, P.F., B.G. Smith, S.D. Kreiter, C.A. Miller, R.B. Salter, C.H. McNicoll, and W.J. Hann. 1999. Historical and current forest and range landscapes in the interior Columbia River Basin and portions of the Klamath and Great Basins. Part 1: Linking vegetation patterns and landscape vulnerability to potential insect and pathogen disturbances. Gen. Tech. Rep. PNW-GTR-458. USDA Forest Service, Pacific NW Res. Stn., Portland, OR. 357p.

James, David G. Nunnallee, David. 2011. Life histories of Cascadia butterflies. Oregon State University Press. Corvallis, OR. 447p.

Johnson, D.H., and T.A. O'Neil, Managing Directors. 2001. Wildlife-habitat relationships in Oregon and Washington. Oregon State University Press, Corvallis, OR. 736 pp.

Kaminski, T., and J. Hansen. 1984. Wolves of central Idaho. Unpublished report. Montana Cooperative Wildlife Research Unit, Missoula, MT.

Kappes, H. 2005. Influence of coarse woody debris on the gastropod community of a managed calcareous beech forest in Western Europe. Journal of Molluscan Studies 71(2): 85-91.

Kelson, R.V. and M.C. Minno. 1983. Observations of hilltopping *Mitoura spinetorum* and *M. johnsoni* (Lycaenidae) in California. Journal of the Lepidopterists' Society, 37:310-311.

Koch, Jonathan. Strange, James. Williams, Paul. 2011. Bumblebees of the Western United States. www.pollinator.org/books. 144p.

LaBonte, J.R., D.W. Scott, J.D. McIver, and J.L. Hayes. 2001. Threatened, Endangered, and Sensitive Insects in Eastern Oregon and Washington Forests and Adjacent Lands. Northwest Science, 75.

Marshall, B, M.G. Hunter, and A.L. Contreras, eds. 2003. Birds of Oregon. Oregon State University Press, Corvallis. 752p.

Miller, J.C. and P.C. Hammond. 2007. Butterflies and Moths of Pacific Northwest Forests and Woodlands: rare, endangered and management-sensitive species. FHTET-2006-07. USDA Forest Service, Forest Health Technology Enterprise Team. 234p.

ODFW. 2006. Oregon conservation strategy, conservation summaries for strategy species. Oregon Department of Fish and Wildlife, Salem, OR.

ORNHIC. 2009. Oregon Natural Heritage Information Center. Oregon State University, Corvallis.

Pilsbry, H. A. 1946. Land Mollusca of North America (North of Mexico), Academy of Natural Sciences of Philadelphia, Monograph 3, vol. 2(1): l-520.

Pyle, R.M. 2002. The Butterflies of Cascadia. Seattle Audubon Society, Seattle, Washington. 420p.

Raphael, Martin G., and Marshall White. "Use of snags by cavity-nesting birds in the Sierra Nevada." *Wildlife monographs* (1984): 3-66.

Raphael, Martin G., Michael L. Morrison, and Michael P. Yoder-Williams. "Breeding bird populations during twenty-five years of postfire succession in the Sierra Nevada." *Condor* (1987): 614-626.

Ruediger, B., J. Claar, S. Gniadek, and others. 2000. Canada lynx conservation assessment and strategy. USDA Forest Service, USDI Fish and Wildlife Service, USDI Bureau of Land Management, and USDI National Park Service. Forest Service Publication R1-00-53, Missoula, MT. 142 p.

Ruggiero, L. F., K. B. Aubry, S. W. Buskirk, G. M. Koehler, C. J. Krebs, K. S. McKelvey, and J. R. Squires. 2000. The scientific basis for lynx conservation: qualified insights. Pages 443-454 *in* Ruggiero, L. F., K. B. Aubry, S. W. Buskirk, G. M. Koehler, C. J. Krebs, K. S. McKelvey, and J. R. Squires, editors. 2000. Ecology and conservation of lynx in the United States. University Press of Colorado, Boulder, CO. 480p.

Scott, J.A. 1986. The Butterflies of North America. Stanford University Press, Stanford, California. 583p.

Stalmaster, M.V. and J.R. Newman. 1979. Perch-site preferences of wintering bald eagles in northwestern Washington. Journal of Wildlife Management 43(1): 221-224.

Stebbins, R. C. 1985. The Peterson Field Guide Series: A Field Guide to Western Reptiles and Amphibians. Houghton Mifflin Company, Boston, MA. 336 p.

Thomas, J. W., ed. 1979. Wildlife habitats in managed forests: The Blue Mountains of Oregon and Washington. Agricultural Handbook No. 553. USDA Forest Service. Washington D.C. 512p.

USDA Forest Service. 1990. Land and Resource Management Plan, Wallowa-Whitman National Forest. USDA, Forest Service, Pacific Northwest Region (R6), Wallowa-Whitman National Forest.

USDI Fish and Wildlife Service. 2011. Federally listed, proposed, candidate species and species of concern under the jurisdiction of the Fish and Wildlife Service which may occur within Baker County, Oregon. Last updated October 8, 2011. Accessed online October 12, 2011 at http://www.fws.gov/oregonfwo/Species/Lists/

Verts, B. J., and L. N. Carraway. 1998. Land mammals of Oregon. University of California Press, Berkeley, CA. 668p.

Wisdom, M.J., R.S. Holthausen, B.C. Wales, C.D. Hargis, V.A. Saab, D.C. Lee, W.J. Hann, T.D. Rich, M.M. Rowland, W.J. Murphy, and M.R. Eames. 2000. Source habitats for terrestrial vertebrates of focus in the interior Columbia Basin: Broad-scale trends and management implications, Vol. 2 – Group level results. Gen. Tech. Rep. Threatened and Endangered Species, Sensitive Species and Management Indicator Species and the level of analysis required. PNW-GTR-485.

Witmer, G. W., S. K. Martin, and R. D. Sayler. 1998. Forest carnivore conservation and management in the interior Columbia Basin: Issues and environmental correlates. Gen. Tech. Rep. GTR-PNW-420. USDA Forest Service, Pacific Northwest Research Station. Portland, OR. 51p.